

PATENTSIN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Anticipated Classification: Class 455 Subclass 234.1

Filed: HEREWITH

For: THROUGH-THE-EARTH COMMUNICATION SYSTEM

Prior Application

Serial No.: 09/578,757
Filed: May 25, 2000
Examiner: Tony T. Nguyen
Art Unit: 2684

Assistant Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

S I R :

Please amend the above-identified divisional
application filed herewith, of pending prior Application Serial
No. 09/578,757, filed May 25, 2000, as set forth below.

IN THE TITLE:

Please change the title to -- THROUGH-THE-EARTH COMMUNICATION
SYSTEM --

IN THE SPECIFICATION:

Please replace the paragraph beginning at page 1, line 6, with the following rewritten paragraph:

-- This is a division of Application No. 09/578,757, filed May 25, 2000. Application No. 09/578,757 claims the benefit of U.S. Provisional Patent Application No. 60/135,765 entitled METHOD AND APPARATUS FOR A MINE COMMUNICATIONS SYSTEM, filed on May 25, 1999 --

In the Abstract delete Title on line 1, page 60.

IN THE CLAIMS:

Please cancel claims 1-75, and add new claims 76-95 as follows.

76. (NEW) A communication system for communicating between the surface and underground areas of the earth where amount of energy used for communications is limited, comprising:

a modulator for modulating a single sideband carrier signal;

a first amplifier coupled to the modulator to amplify signals received from the modulator; and

an antenna coupled to the first amplifier to receive amplified signals from the first amplifier, the antenna being tuned with a series capacitor to reduce impedance and the antenna being coupled by magnetic flux linkage to a second antenna for communicating to a second system coupled to the second antenna, wherein low energy input into the antenna is communicated to the second system via the second antenna.

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77. (NEW) The communication system as claimed in claim 76, wherein the system further includes:

an output device coupled to the first amplifier, and
the antenna has a switched connection to the modulator and the first amplifier, wherein the antenna's connection can be switched between the first amplifier and the modulator, and the signals received at the antenna are demodulated by the modulator and amplified by the first amplifier and applied to the speaker for output.

78. (NEW) The communication system as claimed in claim 76, wherein the modulator includes a single sideband modulator.

79. (NEW) The communication system as claimed in claim 78, further including:

a second amplifier coupled to the single sideband modulator,

wherein the second amplifier receives signals representing voice input and transmits the signals to the single sideband modulator.

80. (NEW) The communication system as claimed in claim 79, wherein the second amplifier includes an automatic gain control amplifier.

81. (NEW) The communication system as claimed in claim 79, wherein the second amplifier includes an analog gain control amplifier.

82. (NEW) The communication system as claimed in claim 79, wherein the second amplifier includes a digital gain controller.

83. (NEW) The communication system as claimed in claim 76, wherein the modulator includes a digital signal processor.

84. (NEW) The communication system as claimed in claim 76, wherein the first amplifier includes:

a preamplifier to receive signal from the single sideband modulator; and

a power bridge amplifier coupled to the preamplifier and the antenna,

wherein the power bridge amplifier receives the signal amplified by the preamplifier and applies the signal to the antenna with current.

85. (NEW) The communication system as claimed in claim 76, wherein the modulator includes a frequency-shift-keying modulator.

86. (NEW) The communication system as claimed in claim 76, wherein the modulator includes a phase-shift-keying modulator.

87. (NEW) The communication system as claimed in claim 76, wherein the modulator includes a quadrature phase-shift-keying modulator.

88. (NEW) The communication system as claimed in claim 76, further including a filter coupled to the modulator, wherein the signal is filtered to be within a predetermined range.

89. (NEW) The communication system as claimed in claim 88, wherein the filter is a passive filter.

90. (NEW) The communication system as claimed in claim 89, further including an active filter coupled to the passive filter.

91. (NEW) The communication system as claimed in claim 76, further including a comb filter coupled to the modulator, the comb filter enabled to track drifting noise of selected frequency and their harmonics.

92. (NEW) The communication system as claimed in claim 76, further including a tracking comb filter coupled to the modulator, the tracking comb filter enabled to track drifting noise of selected frequency and their harmonics.

93. (NEW) The communication system as claimed in claim 76, further including a relay coupled to the antenna, the relay enabled to connect and disconnect the antenna from coupling with the signal processor.

94. (NEW) The communication system as claimed in claim 93, further including a switch coupled to the relay to control the relay.

95. (NEW) The communication system as claimed in claim 76, further including a relay coupled to the antenna, the relay enabled to connect and disconnect the antenna from coupling with the first amplifier.

REMARKS

This is a preliminary amendment to a divisional application of pending prior Application Serial No. 09/578,757, filed May 25, 2000. Claims 1-75 are being canceled, and new claims 76-95 are being added in this preliminary amendment. Prompt consideration and allowance of the present application are earnestly solicited.

If a telephone interview would be of assistance in advancing prosecution of the subject application, Applicant's undersigned attorney requests the Examiner to telephone at the number provided below.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

Respectfully submitted,



January 11, 2002

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VERSION WITH MARKINGS TO SHOW CHANGES MADEIn the Title:

Please change the title ~~"Facility Wide Communication System"~~ to THROUGH-
THE-EARTH COMMUNICATION SYSTEM

In the specification:

Paragraph beginning at line 6 of page 1 has been amended as follows:

This is a division of Application No. 09/578,757, filed May 25, 2000. ~~This a~~Application No. 09/578,757 claims the benefit of U.S. Provisional Patent Application No. 60/135,765 entitled METHOD AND APPARATUS FOR A MINE COMMUNICATIONS SYSTEM, filed on May 25, 1999.

In the claims:

Claims 1-75 have been canceled.

Claims 76-95 have been added.

In the Abstract:

Please delete the Title, on page 60, line 1.

~~Facility Wide Communication System~~